

Here you see one of our transmitters. We have fifteen operating today, throughout the New York region. We do not have to be on the tallest buildings. We have to be among the tallest buildings, but not the tallest. It gives us another flexible advantage in building towers.

Here you see how we have been structured. We are a public company listed on NASDAQ. The different segments we are actually authorized to provide are underneath, in subsidiaries. We have an existing subscription television business. The last number that we had in terms of subscribers was 18,000. We have introduced a high-speed Internet product, which I will discuss a little bit later. We also have a signed interconnection agreement with Bell Atlantic, which lets us go into the phone business.

We give you the capacity of 1300 megahertz within a given cell. You could have 65 analog television channels or 220 digital television channels, between 20,000 and 25,000 simultaneous telephone calls, or 1700 fully-duplex video conferencing transmissions. Again, the cells can be as small as you want them to be. Or you could have 10,000 ISDN lines. The regulatory structure that we helped develop, to govern LMDS, allows you to be in any of those or a combination thereof.

Today, we are operating television primarily in the Brooklyn area. It's an affordable alternative to cable television. We have the best of cable on that programming lineup, and we have a very, very unique advantage in our ability to offer ethnic programming on the different territory bases.

High speed Internet, I think, is what we're all talking about when bandwidth is discussed. I listened to the panel earlier, and one of the interesting topics was about teenagers moving away from television over to the Internet, as something they demand and the last thing they want to lose. For us in the broadband business, everything is ones and zeroes, and what those ones and zeroes add up to at the end of the pipe. It doesn't really matter to us as long as we're capable of carrying them. The key is who can carry the most ones and zeroes, or be part of the delivery of those ones and zeroes, and make a return on your investment. LMDS has the capability, and we're demonstrating it today, to carry ones and zeroes in large quantities in the Internet business, translating to telephone traffic and translating to television traffic. At the end of the day, everything is going to be divided into ones and zeroes.

We have just introduced a new service called supercharging, which basically allows us to work with all ISPs, taking the downstream as the bottleneck and alleviating that bottleneck over the broadband wireless platform that we operate in New York. I'm going to demonstrate what it does to alleviate the bottleneck. It's called a world wide wake.

Here are some download streams translated into the *Encyclopedia Britannica*. With the 28.8 transmission rate, it would take you twenty hours. Here are all the various rates, but going down to our 48 megabyte per second, or, in 28.8 terms, it's 48,000. It basically takes the transmission 42 seconds. Now, that is definitely the key to making the Internet a much more friendly place for everyone to work, and more friendly for entertainment purposes as well. We can do this throughout the urban areas of the United States at a fraction of the cost of fiber-optic, and, another important point, at a fraction of the time. The major element of fiber optics, in terms of cost, is labor. Labor costs keep on going up and time keeps on going up as well.

I think in the future you are going to see everything merging into one platform, and the broadband platform is the key to the future.

Elwood Kerkeslager, AT&T

MR. KERKESLAGER: Good morning. As I sat in the audience this morning, I came to a couple of conclusions. One, we do not have, as Commissioner Ness said, a problem with investment in the technologies needed for broadband in the exchange. We do not have problems with many companies doing research, investing in the future and attempting to get into the local exchange. However, in listening to the first panel, I heard a lot of exciting new ideas on a lot of work being done, a lot of new products coming out. As I look back into my experience in the modem business, as the modem business has evolved over almost thirty years now, I see no lack of progress, in terms of what can be done by innovating, by small companies working in a competitive market to bring new capabilities to the home.

So, as I focused on what needs to be done here, in this panel for getting broadband services at home, I came to one conclusion when I integrated with what I had heard thus far. The issue is not what the ILEC industry is not doing in terms of investment. We should not focus on whether or not the ILEC is investing in broadband in the local loop. If that is an issue, that's the ILEC's issue to be concerned about, and we certainly don't have to worry about creating incentives for an ILEC to do that.

The issue is how do we unleash those forces and remove the frustration being exhibited by the Motorola's and the Intel's and the other companies - even the modem companies that were not represented here, such as Cisco, etc. - to get those technologies that have actually been available for over five years, to get up to 8-9 megabytes onto the local loop? The issue is how do we unleash that competitive energy, that investment, and make it reality?

So, in the context of getting more broadband services at home, I would like to lay down a modest proposal for how that can, and should, happen.

As for the question that was raised about whether or not we should have less regulation, I think the answer is yes. We should have less regulation, of course. That's always the trend, that's always the way we should be going. However, I'm going to wind up suggesting that there's things the FCC should be doing to break this log jam in the local loop.

I was part of the Bell system back in the 1960s, and I remember what happened when the FCC took action and told the Bell system they had to define an interface between the local loop and the black telephone. The Bell system clearly resisted that, and it took almost ten years of regulatory pressure before that hole in the wall, known as the telephone jack, was standardized.

It took a lot of work by the industry to develop standards to make that happen. That little hole in the wall, and the standards represented by it, such as the physical standards and the electrical standards for that interface, created a tremendous industry. An entire industry was created with that standard, in order to allow you to plug in what was originally envisioned as telephones into the local loop and provide a competitive market for telephones, so that you could get black, red and green telephones.

Well, it turned out that a lot more happened than just getting color telephones, even though that is a multi-billion dollar business. The entire modem industry went from the Bell system, 300 bits per second up to 56 kilobits per second, and that is by having control of only one end of the local loop. Just having access to one end of the loop afforded the ability to interface into the local loop and communicate through the local network into an ISP, even around the world, at 40 to 60 kilobits per second.

So, first faxes, then PCs, then online applications and the Internet itself, were dependent on that hole in the wall, which was mandated by the FCC and developed by the industry. The bottom line is that the FCC should do more work like that. It should take some specific actions, which I'll get to in a minute, and tell the industry to develop another standard. Then, the industry will have a lot of work to do to develop that other standard, which pertains to the other end of the local loop.

Now, as for the market we're talking about at the other end of the local loop, just imagine for a second what could happen immediately if the other end of the local loop was identified in the same way that hole in the wall in your home is identified. Over five years ago, we had a number of manufacturers who demonstrated products capable of operating at one-to-eight megabits per second, over the local loop. However, because they could not convince the ILECs to install it in the central office switch, they were out of luck. The ILECs would not do it, and still have not done it, except for some small number of services in the United States. That's because there's not an open public standard available for all the manufacturers to manufacture it, and because the space is not available at the central office.

Consequently, we do not have an industry developing as it should at the other end of the local loop. The modem manufacturers and all of their counterparts - manufacturers of routers, switches, etc. - should be in there at the other end of the local loop, creating an entirely new industry at least as large as the modem, PC, and FAX industry that developed from that hole in the wall.

The bottom line is that we would have a whole new industry, and it would have immediate effects in the home and a tremendous impact on the computer industry, the ISPs, and the software industries, if we had a free and open market at the other end of the loop.

Now, what would it take to make this happen? I suggest it would take exactly what happened in the mid-to-late 1960s, namely, an FCC proceeding to say that we will do this, that we will create an open market at the other end of the local loop. Here is what we desire. These are the terms and conditions that we've applied, and it must be industry-driven, not government-driven. It must be open to all. Space must be available, power must be available. Then, let the market develop, and we will have a blossom of innovation like we have never seen.

Now, is this consistent with the Communications Act of '96? The answer is yes. It is actually mandated by the Communications Act of '96. It is one of the conditions for opening up to unbundled network elements. This has not happened yet, and we need to require the implementation of this standard. This is exactly parallel to what the FCC has done in the past, and we know it can work, and we know the result.

Now, who will not like this idea, besides, of course, the ILECs? The only speaker I've heard this morning, who might not like this, is Corning. I'm not picking on Corning here in particular. On the other hand, from my experience with consumer groups and small businesses, when you get in the range of one-to-eight megabits a second, you have covered most applications for most consumers, and I maintain that we can have that in the market as soon as we get this proceeding underway. Thank you very much.

Tom Tauke, Bell Atlantic

MR. TAUKE: During the two years since the passage of the Telecommunications Act, there has been a lot of discussion about the need for investment in the product end, and the need for investment in the network, in order to encourage the development of the new technologies that are available to people, to facilitate their ability to communicate.

Yet, as we at Bell Atlantic have looked at the problems and challenges we face, and that the industry faces in making these investments, it is pretty clear that regulation is part of it, and technological uncertainty is part of it, but the biggest issue really has to do with incentives for investment. Any company that is going to make investment in infrastructure has to have some incentives to do so. You have to be able to believe that you're going to get a return on the investment. As long as the regulatory process devalues investment in the local network, which is what we believe the current regulatory process does, and as long as it does not permit you to have competitive advantage with that investment, it is difficult for companies to justify that kind of investment in the network.

We know that the key to the future is broadband, getting as much capacity to end-users as possible. At the same time, we have investment options, and, if it is unclear that we can get a return on the investments we are making, we'll look at other options. xDSL will be deployed in the network. If there is an ability to get a return on the investment fairly quickly, it will be deployed quickly. However, if we have the kind of marketplace where the regulatory structure does not promote the sense that one can get a return on the investment, then it is going to take a while for that deployment to become ubiquitous.

I found it interesting to read a comment from the former chairman of ATT, as I was just sitting over there. He said it is an immutable law of business that words are words, promises are promises, and only performance is reality. In this arena, we have had lots of words and we have had lots of promises for performance, and the deployment of broadband capability has been fairly limited. I think part of that is because of the uncertainty.

Let me offer a few observations as to how we can get around, or try to deal with, some of the uncertainty. First, when we think about the deployment of broadband facilities, it is important we understand that all the emphasis in this panel is on deployment to the home. The reality is that there is a problem with the backbone of the Internet, as well as with the local loop. This has become more and more evident in the past year. Many of the players I have spoken to this morning are making investment in broadband capacity, but, the fact is, that investment is insufficient to meet the demands that are there.

Results of a recent study by Keynote Systems, published in the October 1997 *Broadwatch Magazine*, showed that, on the average, users could not download from the Internet faster than

about 40 kilobits per second, because, regardless of what kind of access they have, that's the fastest the backbone will deliver.

In the last several months, we have heard comments from a number of players in this arena, who have pointed out the difficulty in getting adequate investment funds. According to an article from ITT Newservice, for example, the chief operating officer at Worldcom, who certainly is a major player in this area, said Worldcom finds the current bandwidth demand quite frightening. This is a scaling challenge that has never been faced before, he said.

Anthony Townsend, the director of communications at Brown University, recently tried to get high-speed connections from MCI. He pointed out that they were unable to get them. Out-of-service requests to MCI have been rejected due to lack of capacity, he writes. Lack of competition has created a demand/supply relationship that is not in our best interest.

So, I know that the focus is, and probably ought to be, on the last mile, but there also are problems in the Internet backbone, problems that are going to grow in the months and years ahead.

The second point I want to make is that there are players that would like to invest in the backbone. One of them is Bell Atlantic. When we think of meeting the needs of customers, we are attempting to meet their needs in the local loop, in terms of packet switching and also in terms of backbone capacity. In our part of the country, there is a real shortage of backbone capacity, and we have customers who are asking us to invest. That is why we have filed a petition at the FCC, under section 706 of the Act, seeking the ability to invest in backbone for data purposes only, so that we will be able to meet the needs of those customers and also to serve the broader interest of being able to invest and meet the backbone needs of the country.

The third point I have made is that, if we are going to make investment in xDSL and the local loop, we need to have some sense that we will be able to make that investment without unnecessary regulatory interference. Put another way, we don't think that this technology should be subject to the unbundling requirements, to the price cap regulations, and to the many other regulations that could be imposed at the federal or state levels.

Our theory in this filing is quite simple, and that is that the high-speed-data technology is decidedly different from the traditional voice technology. While there is a foundation or basis for regulation of the traditional technology and the traditional voice services, there is no basis or foundation for the regulation of new technology that is deployed, new technology and capability that is designed to serve the data market. If we can move to an era where there is a relatively regulation-free market place for data technology, that will be the best way to encourage investment in that technology.

By the way, we have had some parallel examples of this kind of treatment for new technology. The most obvious is wireless. Wireless, in a sense, was a competitor to the local wireline network, but, when wireless technology was introduced, the policymakers concluded that the best approach for dealing with wireless technology was to suggest that it would be treated from a regulatory perspective different from the traditional wireline technology. The FCC essentially said it would take hands off on the regulation of wireless technology, and the result has been rapid investment and growth in that industry.

We don't know what the future will hold. In fact, Jodie, your leader, Bill Gates, is up on the Hill this morning, and he said, in 1981, that 640K ought to be enough for anybody. If the predictions by people as visionary as Bill Gates are that far off, I think the reality, of course, is that we don't know what the demands will be five years from now or ten years from now. I do have this certainty, however. The regulatory processes in which we are engaged will never be able to keep up with the technology in the market place, and, if the regulatory processes attempt to control the way technology is deployed, and how the marketplace develops, it's going to take a lot longer than it would if the regulatory processes were bypassed or removed from this part of the communications marketplace.

George Vradenburg, America Online

MR. GEORGE VRADENBURG: I want to address the three questions that were put to us by Ms. Foster. Let me talk a little bit about market demand, a little bit about technology, and then a little bit about regulation and public policy.

Just to report from the front, I will tell you that there is an enormous market demand for Internet services in the home, even in narrowband. AOL is primarily a provider of services to homes and businesses. We are seeing hyper-growth, and business demand is accelerating. We have gone from 100,000 subscribers in 1992 to over 13 million today. Most of that is in the United States, although we are now seeing mail going to Europe. It is our goal to be in every home, so we have just started. We cannot understand why 90 percent of Americans don't have us in their homes, but it is our goal to get there.

The way we are going at that proposition is basically to provide what, we believe, is an affordable consumer package, consisting of a variety of services. In 1995, we found that the demand was exceeding our capacity to deliver. We are just always at the edge of being able to deliver an activity to you, and one of the reasons that you sometimes have problems gaining access to AOL is not malevolence on anyone's part, but the fact that the number of people trying to get into the service simultaneously at any point in time is growing enormously. The average usage in the home has gone from 14 minutes in November 1996 to over 45 minutes a day. As I said, during that same time period, our number of consumers has more than doubled. We're looking at more than a million-and-a-half consumers every quarter, and taking up narrowband services, even with all the shortcomings of that service, so there is an enormous demand in the marketplace for our service.

Now, what is that? Well, it's a mix of E-mail, which is perhaps 25 to 30 percent of our service; Chat, the often maligned but very popular capacity for people of like interests around the world to talk simultaneously with each other about any number of topics - everything from holocaust survivors to stamp collectors. We have up to twenty thousand people per chapter per night on AOL. Our average simultaneous-user figures show participation now in prime time is in excess of 600 thousand, and is growing every single month. Indeed, that now exceeds simultaneous viewing on MTV, CNN, or most cable networks. If you consider that we're only in 10 percent of American homes for all those people networks, or even, in fact, 70 to 80 million homes; if you look simply at our footprint in 10 million American homes, our evening ratings

exceed most of the broadcast networks. This is not to brag about AOL, but to express the view that, in fact, this mixed package of communications and information and content, and a variety of other things, is enormously popular. There is enormous demand, even in today's technology.

Now, is there a demand for broadband? We think there is, at a certain price. We heard interesting statistics earlier about 14 to 16 million people wanting broadband capacity beyond the ISDN rate by the year 2001. Until we do, I think we're going to have many questions about whether that kind of demand exists. Our subscribers are mostly using 28.8 modems, and now will be increasing to 56 kilobits, but our experience indicates that, while there is demand for higher speeds, what consumers really want is an all-response system, an activity that is at least as important, if not more important, to them than speed. So, we are willing to take some performance degradation in order to get a lower price, in order to make affordable computers that we can have in all systems.

So, yes, there is a demand for broadband. Yes, the demand will primarily be for a system that is always on and permanently connected. Yes, also, there will be a demand for speed and, indeed, a demand from certain segments of the marketplace for speed that is significantly above the levels seen today.

I do think, however, that, in dealing with what we are dealing with today, we must remember to think of the consumer that may not necessarily want to be paying \$50 or \$60 or \$70 a month to connect. We have to be thinking in terms of affordable service to consumers.

So, there is market demand out there, and we have heard from a variety of presentations this morning that at least the perception of this technology is in place, and is able to deliver broadband capabilities in response to the demand.

The critical question, as we look out on the next five years, involves a combination of public policy and some decision making on the part of several industries. I think we are at an inflection point, which industry is going to be the primary infrastructure for connecting to the Internet five and ten years from now. The telephone industry, the cable industry, the satellite industry, and other wireless industries are contenders, but which one will succeed, or which one will get the massive first-mover advantages, will depend as much on business decision making within those industries as it will on anything having to do with market technologies. We now have to look at those industries to say which industry is likely to be the first mover. One can always look back at this industry and say that there were multiple, potential choices for how a particular technology industry and market might go, and it does seem in retrospect always to be inevitable. However, it is not inevitable unless you look forward right now.

I say that the industry most likely to be the infrastructure in the future is the industry that's going to open itself up to multiple providers. If you look at the way the Internet access business and service provider business has grown to date, there are over 4000 Internet service providers offering a range of services, from \$9.95 for pure Internet access, up to our \$21.95, and others are higher. They all ride on an open infrastructure of narrowband telephony. It is an old voice circuitry system designed for another purpose, but that system is open and tested.

As we move into the broadband future, we look at a telephone industry that's trying to close up that open accessibility, through the 706 petition Bell Atlantic submitted. We are also looking at a cable industry that has not opened itself up at all and, in fact, is trying itself to

become very vertically integrated through @Home and Roadrunner. So, that industry has not opened itself up to multiple providers to become the infrastructure of the future and, of course, satellite also.

So, right now, there is an enormous potential for personal advantage, for those in telephone or cable or satellite or wireless that open up their facilities and allow the demand and investment to flow through. Companies like Covad are prepared to invest in DSL technology. Maybe Bell Atlantic has other investment choices it can make. Covad is prepared to invest today in that technology. It can't do that, or it has impediments, as we have heard, because the local loop is not open. When they go over there and try to get a price for a UNE, the local loop, they'll hear \$22 per month. That's just for access to a local loop, but it doesn't require any margin of cost or service on the part of Bell Atlantic. Well, if you try and get that price, you're going to have an infrastructure that isn't open at that price. It's too high for most consumer applications, in terms of cost-effectiveness.

These industries have choices right now. None of these industries is opening itself up to broadband and taking advantage of what could be an industry-transforming characteristic, of being the infrastructure for the Internet.

Now, Bell Atlantic said performance problems with the backbone is really the problem they want to solve. Well, we deal with the performance problems of the backbone by caching a lot of the material, and it gets past the backbone problems to the extent that there are any backbone problems. We still only get an average 40 kilobits per second through our lines, however, and that is no because of the backbone.

We need investment in the local loop. Bell Atlantic says it wants to invest in the local loop, but it needs the incentive of being able to offer service at a competitive rate. I understand that, because there's simply demand for users like us, for end-to-end service. We want our consumers to come out of Bell Atlantic territories and all the way back to our facilities, so we are a demander of full end-to-end service. So, why is it that Bell Atlantic needs to close out its infrastructure to other investments? Bell Atlantic says, "Gee, this is a new paradigm. It's a brand new technology, like wireless." However, wireless was a new infrastructure that was competitive with the old, whereas DSL technology still rides on the local loop, where Bell Atlantic still has the perfect monopoly in the local marketplace. So, this particular regulatory scheme continues to hold its rationale in the DSL world, so that local loop will not be made available to Covad and many others who are prepared to invest in DSL technology and to deliver the consumer an affordable service.

So, let me just end by saying that market demand is there. We are part of it. It is getting expressed, in part, through us. Demand for broadband is there. We're hearing it from our customers. They want systems that are always on, and they do want more speed. Moreover, we can offer more services, and we are interested in getting broadband delivered to us, but none of the industries yet have opened themselves up to permit us to buy and resell, to have our supplies, to buy and resell capacity, and to offer a package of affordable services.

40• *America's Broadband Future Conference. March 3, 1998*

Duane Ackerman, BellSouth

I appreciate very much the Economic Strategy Institute organizing this forum on America's broadband future . . . and for allowing me the opportunity to offer BellSouth's perspective on that future.

I'm pleased you're all here. And I'm sorry Bill Gates decided he'd rather testify before the Senate Judiciary Antitrust Subcommittee than come to be with us here at lunch. Then again maybe he didn't have any choice.

And believe me - I can empathize with Mr. Gates because when the federal government decides to help you with your business - you had better give them your attention - or run the risk of suffering all the consequences.

The telephone industry for years has had the government as a full partner. That's not a complaint - just a statement of fact. Communications infrastructure is so critical to a vibrant economy - and so capital intensive - that that the government understandably has had a strong and compelling interest in what we were doing - how we were doing it - and ultimately what we charge for it.

Contrast that with the short - but successful history of the computer industry - which has to this point stayed as far away from the hand of government as possible - to the point where Silicon Valley would be under water if it got any farther away from the nation's capital.

When you look at these two industries and how they originated, it's not hard to understand how there's been a lot of miscommunication between the two up to this point in our history.

The one, telecommunications, regulated at the state and federal level down to being told the useful life of any one piece of the network.

The other - the computer & information industry free to pursue their business with few if any government strings attached.

And now the two bound together in a society increasingly tied to the latest in information technology. Technology that's critical to this country if we are going to continue to lead the world's economy and vital to the necessary leaps in productivity to sustain this incredibly long business cycle.

It is going to be a New World. In fact, it seems to be a New World on almost a daily basis. And that means that many of the old ways of our industry are going to have to change if we are going to survive in this new age.

Which brings me to investment. Or as we call it when we decide the efficient use of capital in BellSouth - resource allocation. Because that's really what managers are all about,

when you get right down to it. How are we going to use the capital that our shareholders have placed under our stewardship to grow our business in a profitable way?

How can we provide a competitive return to shareowners and do it in a way that accomplishes the social good that the government expects - and the private good that the computer industry expects? It used to be - 15 years ago - when people in the telephone industry discussed investment - there weren't a lot of choices. The capital on hand went into the wireline telephone business. Then just about the time of divestiture along came another choice - wireless communications (and thank goodness) - much less regulation.

It was really a new day for telephone companies - the opportunity to build telecom systems without the stifling hand of regulation at every turn. We liked it. And we built it quickly. And the customer liked it. It seemed to be a pretty good model.

And then along came PCS. And more opportunity and freedom. And gradually international opportunities were available and they became part of the mix. And then Internet access. And now managed data networks. And mobile data networks. And video services. And information services. And suddenly it's not so easy anymore to decide where to put that capital our shareholders entrust us with.

You know what? That's a good problem to have - if you think you are good at what you do and your customers seem to like how you do it. It's a good problem to have. So if BellSouth wants to deliver Wall Street and our shareholders the consistent and double-digit growth they expect, where should we invest? Will it be the same place that regulators want us to invest? Will it be where the computer industry wants us to put our capital?

Contrary to what many in Silicon Valley write about us . . . think about us or say about us . . . And they say plenty. Regardless of any disparaging remarks from that particular camp . . . the fact is . . . we on this side of the communications industry can figure out that Internet data growth looks a lot more exciting than voice traffic growth. Voice traffic growth doubles every twelve years; . . . the Internet, almost every quarter. We want a share of the Internet pie; we expect to get it. The question is how quickly and whether we get there quickly enough.

I'd like to share with you our basic understanding of the situation. First, communications and computers aren't just technically converging in data networks like the Internet . . . the industries increasingly depend on each other for growth -- a natural result of this marriage in information technology. For the computer industry, this means they are increasingly dependent on networks as an avenue of growth, as evidenced by how the Internet jump-started their financial performance. Back in 1993, the computer business was facing a five-year stock market slump. Between 1988 and 1993, the average stock price of the top computer companies actually dropped 36 percent. And this drop occurred as the Standard & Poor's 500 grew by 120 percent.

Then, along came a little thing like browsers which made the World Wide Web accessible. Suddenly, people had a reason - or an excuse - to upgrade their computers. The computer business took off like a rocket. Since 1994, the stock price of the top 50 U.S. computer companies has surged by 318 percent. At the same time, incidentally, the S&P rose 143 percent while the index for the top 50 telecom companies climbed a scant 78 percent.

So the first point is that when computers became married to communications networks - especially through the Internet . . . the wedding produced amazing growth in the computer industry. Second, it's pretty clear to us that - even as the Internet becomes more important to the computer industry's future -- the Internet will soon outgrow the capabilities of the public switched telephone network.

Until now, those technical capabilities of personal computers, modems and the Internet itself have enabled most users to get pretty much everything they wanted through dial-up 28.8 Kps connections over standard, . . . voice grade telephone lines. But we don't think that will continue - - simply because the next generation of Internet applications will require substantially more bandwidth than can be had over a regular analog telephone line. If the Internet is to continue to fuel rapid growth in the information sector - and growth in the economy more generally - telecom carriers will have to deliver much bigger, faster data pipes at prices that consumers and small businesses can really afford.

Bill Gates, Andy Grove, and others in the computer industry have been telling us this for some time. They understand that on-going improvements in personal computers and prepackaged software alone won't do the trick. They understand that bandwidth is imperative. We couldn't agree more. We also understand that we'll have to work more closely with computer manufacturers and Internet service providers to make the web more friendly and valuable to consumers.

We have some efforts underway along these lines. We're pleased to be working with Microsoft, Intel and Compaq through the Universal Working Group on a framework for digital subscriber line (DSL) standards. Our recent agreement on the DSL Lite prototype is a breakthrough that should allow us to avoid many of the problems that slowed delivery of ISDN to market.

Our aim is to use this technology to offer residential customer an easily installed high-speed connection of 1.5 megabits at a widely affordable rate beginning later this year. If we succeed, ADSL will give Internet service providers and users the bandwidth they need to take the Internet to another new level. The appearance of a widely affordable 1.5 megabit ADSL connection will hasten the deployment of high-speed internet applications that we have been hearing so much about for so many years.

In any case, the DSL Lite cooperation shows how the computer and communications industries can work together to advance broadband. As to BellSouth's own broadband efforts, I should also point out that we are doing more than you might think. We have already installed 150 . . . frame relay data switches, and over a dozen ATM switches, and we're continuing to install more.

In order to improve service delivery of managed services, unbundling applications, and computer infrastructure - - we have created a managed network services alliance with EDS. In 1998, we will invest over \$7 billion to grow our business. Of that \$7 billion . . . about \$3.4 billion will be spent on our local, wireline telephone networks -but not as much as you would like to keep up with the new broadband networks. What then will it take to spur billions more investment in broadband capacity? Well, Walter Wriston, former Citicorp Chairman, often said which seemed to go down pretty well: "Capital goes where it is welcome, and stays where it is treated fairly." And, it seems to me that there are two things that really need to be done -- to

ensure companies can make the kind of investment that the computer industry wants, and the American public and our economy needs.

The first thing regulators need to do is declare a "regulatory moratorium" -- before they saddle tomorrow's networks with the same old rules and regulations. And, the second step regulators need to take is to eliminate rules that restrict the ability of telecom carriers -- including my own company -- from using our networks anyway that serves the customer. This country has well over \$300 billion -- one-third of a trillion dollars -- invested in communications plant and equipment.

The last thing we need is the government rationing the use of that resource. We need to encourage network use -- not restrict it. The more we do with our network, after all, the lower the cost of providing service to individual customers. The broader the universe of customers and traffic we have, the more we can spread our network's costs and the lower prices will become.

Too many government rules directly or indirectly have the impact of curbing how much traffic can transit our networks. Or still prevents us from working directly with manufacturers to upgrade our networks. It's as if the government tried to restrict how efficiently United Airlines can use its planes, how much natural gas Colonial Pipeline can pump, or how CSX can use its trains. A "regulatory moratorium" on advanced networks and removing prohibitions on the use of existing networks -- these twin measures would spur more investment, accelerate innovation, and unquestionably contribute to the economic welfare of all Americans.

If America's computer and software companies were under the kind of regulation BellSouth contends with, where would this country be? Suppose, there was another FCC in Washington -- a Federal Chip Commission. And suppose this commission decreed that Intel should introduce a new generation of chips, but could only earn the prime rate plus four or five hundred basis points. Believe me. Federal law would have trumped Moore's Law long ago.

And, when I talk about artificial regulatory restrictions on network use, I include all the limits on our ability to carry interLATA traffic -- including data. Just last month, the World Trade Organization's "Agreement on Basic Telecommunications" went into effect. That Agreement is supposed to reflect today's commercial realities -- seamless networks, global markets, and the worldwide Internet. Meanwhile, however, back in Washington the regulators are debating whether or not BellSouth can compete in just South Carolina!

The regulators seem wedded to a system of "no-trespassing zones" which was cooked up in 1982 -- four years before the personal computer debuted -- and which was based on the switching technology of the 1970s. It's almost as if the computer industry were forced to deal with punch cards -- or had scores of regulators worried that technology might bring competition and change. I believe America needs to be as pro-competitive and progressive as the rest of the world. America's regulators have to be prepared to take the risk of competition. Our free enterprise system depends on competition and customer choice. We ought to try that same approach in telecommunications -- and stop trying to inhibit new services, new jobs, and new investment. As Congressman John Dingell said yesterday: "The current Chairman of the FCC confronted a wonderful opportunity. He could repair the extraordinary damage done by

his predecessor. He could sweep away barriers to competition, unleashing the forces of free enterprise, and begin the job of building the much-maligned 'bridge to the 21st Century.'"

I couldn't agree with Congressman Dingell more. Like him, I also wish Chairman Bill Kennard well. I believe the FCC's decisions in this area over the next year or two may prove to be far more consequential than we might think. Right now, the computer industry is obviously riding pretty high. The run up in U.S. computer stock prices since 1994 has created nearly \$900 billion in shareowner wealth.

But how long will the good times roll? Let's remember, a lot of that shareowner wealth reflects future expectations. And, a lot of those expectations are premised on a belief that our telecom networks will keep pace with Internet.

My message here, today, is that none of this is a given. Whether our networks keep pace with users needs -- and, how fast that happens - will depend heavily on the willingness of the regulators to contain their appetite for more regulation.

As a communications executive, I certainly don't want to see the computer "bubble" or the telecommunications "bubble" burst. I see our futures securely bound together to our friends - and critics -- in the information technology sector.

We create value for each other. We can benefit from the demands created by digital revolutionaries. We will be dependent on the whole complex of Internet products and services. But that relationship runs both ways. After all, we're all in the same digital boat - and everyone in that boat has to cooperate and pull their own weight. Some say why bother. BellSouth is regulated. Other suppliers of digital infrastructure are not. They say regulation is our problem. Live with it. Sometimes, I wonder if that's right. Can the FCC regulate the supply and data capabilities of telecommunications barriers without impacting the demand for software, computers, components and the whole array of Internet services?

Can regulators create disincentives for network investment without adversely affecting companies that use those networks to create value for their customers and shareholders? Merely asking the questions is to answer them. There is much that our industries can do together to hasten deployment of broadband. Our work on ADSL is a beginning. Work by both traditional and non-traditional suppliers for long term broadband solutions is another critical step.

But however much we can do together . . . there are some basic things we simply cannot do. We cannot unilaterally redraw the regulatory environment to encourage investment in broadband. To realize our expectations of a digital future, we need to persuade regulators to avoid imposing an outdated and largely discredited regulatory model onto the Internet. Instead, we need to convince regulators that the benefits of not regulating new data service like ADSL - increased investment, better jobs, and more rapid innovation - that by not regulating those will far out weigh any conceivable cost to consumers. If we are to make that case, however, we will need the active support of our partners and competitors who provide other parts of the digital infrastructure.

I want to tell you that we look forward to that debate.

46• *America's Broadband Future Conference. March 3, 1998*

Harold W. Furchtgott-Roth, Commissioner, Federal Communications Commission

Thank you for those kind remarks. It is always refreshing to speak before a group with "Economic" in the title. It is also refreshing to learn about new technologies. This conference has addressed new broadband technologies, and we have all learned much today.

In my brief remarks today, I will speak of new technologies generally, rather than broadband technologies specifically. Broadband technologies, by the way, are not defined under the Communications Act. Let me assure you, not being defined under the Act is an advantage, not a disadvantage.

Still, broadband technologies are potentially subject to all sorts of government regulation, and FCC regulation in particular. I am concerned about government action in general, and FCC regulations in particular, impeding the development of new technologies. To paraphrase from Pogo, "I am afraid that we have met the enemy, and he is us." At least some of the time.

For those of you who work in high technology outside of Washington, let me welcome you to a city where the federal government, with the wave of a magic wand, claims to, and tries to, affect the direction of future technologies. "How," you may ask, "can the federal government affect the direction of technology?" This conference has addressed some of the potentially disastrous effects of overregulation from agencies such as the FCC. But communications regulation is just one way that Washington casts a shadow on the development of new technologies.

The heads of some of the largest software companies are testifying on Capitol Hill today about federal antitrust policy, and technological development, in their industry. Some will say that if only the federal government spent more effort in this area, technology would blossom. Washington is the home of the Internal Revenue Service, the Patent Office, and the Copyright Office, dominant factors in many changes in technology. And Washington is home for the agencies that oversee our international trade, including trade in new technologies. Some will say that if only the federal government spent more effort in these agencies, technology would blossom.

Washington is also the home of the federal agencies that hand out the federal research and development dollars that influence many new technologies. Some will say that if only the federal government spent more effort in these agencies, technology would blossom. Wittingly or not, many government agencies already affect the direction of new technologies without direct regulation. But in Washington, words often speak louder than

actions. It is here that politicians make claims about future technological growth and what might affect it.

Many politicians march around this city proclaiming that unless the federal government plops a computer with internet access in front of every child in America, our future generations will be technologically illiterate and lost in the world market. Of course, at the same time, the latest international educational comparisons show that while American students may be first in terms of access to computers, we are practically dead last in terms of educational achievement.

There are other politicians who claim that without a better moral and ethical foundation, our country is lost and unable to develop new technologies. And Washington is also the home of many business experts. You know the type. If only we had better marketing or better management, we could move the technology frontier out exponentially.

If you thought that new technologies were simply about putting some scientists and engineers together with a computer and a white board, you obviously haven't spent enough time in Washington. Welcome to Washington! Welcome to Washington! The good news for an FCC Commissioner is that we at the FCC are, at most, only part of the problem that may be impeding the development of new technologies. The bad news is that, even if we do every thing we can to allow the full development of new technologies, other parts of Washington may succeed in getting in the way.

Every generation has its infatuations with new and emerging technologies. Two centuries ago, many Americans invested in new manufacturing technologies, and many Americans sought government protection through favorable international trade policy. But governments do not "grow" manufacturing. Despite, and not because of, these government interventions, both manufacturing and the American economy grew.

A century ago, many Americans invested in new transportation technologies. They also sought government protection through favorable tax and regulatory policies. But governments do not "grow" transportation services. Despite, and not because of, these government interventions, both the transportation sector and the American economy grew.

And so there has emerged a common pattern in the political economy of America. Businesses develop new ideas, and they come to Washington seeking protection and help. But governments do not "grow" economic activity. They sometimes receive the help, and the businesses and the economy grow despite, not because of, the intervention.

Today we have before us a new industry with new ideas, ideas that have captured the imagination of American businesses and the American people. It is called "broadband technologies." And these businesses come to Washington with a refreshingly different message. They don't say "help and protect us." They don't say, "Federal government, please 'grow' our business."

They do, however, ask for special treatment. Their special treatment is "Leave us alone. Don't regulate us as you regulate those other businesses. We've seen government efforts to grow other businesses, and we think that they would be lethal for us." And other businesses look at broadband technologies with covetous eyes. They say "Don't treat them any differently. Create special regulations for them. Create special taxes for them. Create special

government programs for them. But whatever you do, do not leave them alone. It would not be fair."

How did we get into this mess? Have we always been too quick to regulate? One hundred and thirty-five years ago, Abraham Lincoln described the United States as a "nation conceived in liberty and dedicated to the proposition that all men are created equal." These were noble ideals for a new nation. How did that young nation protect and nurture such ideals? Some might have guessed with a strong centralized government with unbounded authority.

But a powerful government was not to be the course of American history. To the contrary, the American colonists had rebelled against a government precisely because it sought to exercise expanded authority, precisely because it sought to impose new taxes, and precisely because it sought to overregulate and stifle commerce.

The American reaction to an overactive British government was the U.S. Constitution, perhaps the political document of all time. It begins with "We the People," and its original Bill of Rights ended with two powerful sentences emphasizing that the government serves the people and not vice versa: "The enumeration in the Constitution, of certain rights, shall not be construed to deny or disparage others retained by the people. The powers not delegated to the United States by the Constitution, nor prohibited by it to the States, are reserved to the States, respectively, or to the people."

Between the beginning and the ending dedication to the People are just a few short pages. In those pages is a description of a decidedly weak government, one that is defined more by what it may not do than by expansive, unlimited powers. There are those who say that it is ironic that the most powerful Nation in the world has grown with only a limited government. And there are those of us who find no irony at all.

Someone once described the greatest and wisest power as self-restraint, both in individuals and in nations. A powerless country does not threaten its neighbor. A powerful country may threaten its neighbor. But the most powerful and wise of nations does not threaten its neighbors. It is bound by wise self-restraint, and its neighbors know it, and the world knows it. It would be irrational to threaten neighbors. It would be unwise. It would be wrong. Similarly, the wisest form of regulation is self-restraint. Wise and powerful countries do not overregulate. They do not suffocate. They do not threaten. It is not that they are powerless to do so. Rather, it would be irrational, unwise, and wrong. America must learn to regulate in a manner commensurate with our world leadership.

Overregulation is a great impediment to economic growth. Despite the claims of many politicians, neither governments nor political leaders "grow" economies. Economic growth is the product of common people making uncommon efforts to innovate, to invest, to work hard, and to manage wisely. New technologies. New ways of doing business. In the crucible of life, successful people typically look to themselves, not the government, to undertake these activities. They occur when there is a reasonable expectation that these activities will be rewarded.

It is the People of the Constitution, the People who founded a Nation conceived in liberty and dedicated to the proposition that all men are created equal, who by their individual activities of innovation, investment, hard work, and prudent management. These are the people who truly "grow the economy". The irony is that some political leaders, while claiming

to "grow" the economy as if it were an agricultural crop entirely government control, in fact stunt its growth by removing reasonable expectations of rewards from innovation, investment, hard work, and prudent management.

So what can we do to ensure that the FCC does not stunt economic growth and the development of new technologies? First, I believe that there are some piecemeal, ad hoc activities that the Commission can take. Some of these potentially fall under the Section 706 proceeding. Others may concern the treatment of new technologies in specific issues before the Common Carrier and Wireless Bureaus.

But, in a larger sense, what is needed is not more regulations and more proceedings. What is needed is what I would term rational regulation. Regulation that takes into account the costs and benefits, and moves forward only where benefits clearly exceed costs. That simple prescription may seem obvious, almost tautological to most of you. It's the common sense approach that all successful businesses have. Those that do not, go out of business.

But taking into account the costs of regulation is a radical idea in Washington. When I was Chief Economist for the House Commerce Committee, we surveyed federal agencies for their accounting of the costs of regulation. Not a single one had a clear and complete accounting of the costs of regulation. And the FCC had no accounting at all.

The excuse that all agencies provided was that they were not required by law to account for the costs of regulation. Of course, they were not prohibited either. It is of paramount importance that government agencies faithfully follow their enabling statutes. Businesses and individuals may reasonably be expected to try to get out from under the law. But not federal agencies. There is now, for the first time, a federal statute that may require the FCC to consider the full costs of regulation. It is Section 11 which requires the FCC to conduct a biennial review of all telecommunications regulations beginning in 1998. It is difficult for me to understand how the Commission can review all such regulations without a framework that considers explicitly the costs of regulation. And if we are faithful to Section 11, I believe that we can move the FCC a step away from impeding the development of new technologies and a step closer to the concept of limited self-government on which our Nation was formed.

What is the future of broadband technologies? I do not know. But I look into an audience filled with people who do see that future. It is up to you, and not the federal government, to make wise investments, to innovate, to work hard. And it is up to you to urge the federal government, and the FCC in particular, to show restraint and to regulate wisely but not often.

The wisest government is a limited government, one that takes invasive action only when absolutely necessary. A limited government is not a sign of weakness; it is rather a sign of power, of wisdom, of rationality, and of enlightened leadership. It is that government that we need for our future, and it is that government that I will try to help you find, even here in Washington.